



Cowlitz Indian Tribe

December 1, 2015

Mr. Derek Schruhl
USEPA
Region 10
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Re: Cowlitz Resort Casino – Class V Injection Well, Rule Authorization

Dear Mr. Schruhl:

I would like to thank you again for meeting with us on November 19, 2015. As discussed in that meeting, the Cowlitz Tribe is providing supplemental information for the Tribe's Class V injection wells in response to your letter dated September 4, 2015, to support the Cowlitz Tribe's request for Rule Authorization for Class V injection well(s). As mentioned in our earlier information provided to USEPA, the Tribe is proposing an on-site reclaimed water system and vadose zone injection well(s) that consists of the following components:

- **Casino Operational Practices** – Employing wastewater operational practices in the Casino to minimize loading on the wastewater conveyance and treatment system, for example composting kitchen food wastes rather than putting it in the wastewater drain.
- **FOG Reduction** – Reduction of fats, oils, and grease (FOG) at the Casino Resort using grease interceptors installed on the kitchen grey water lines.
- **Water Reclamation Plant** – Construction of a water reclamation plant that has been designed for reliability and redundancy using the Washington State Department of Ecology *Criteria for Sewage Works Design Manual*. The water reclamation plant includes four individual treatment trains shown in Figure 1. Each treatment train includes an anoxic, aeration, and membrane bioreactor basin. Two of the four treatment trains (Trains 1 and 2) will be put into service (all process and mechanical equipment will be installed) during Phase 1 construction. The other two trains (3 and 4) will be constructed (concrete basins) but will be put into service at later phases of the Casino expansion. If needed, one of the active trains (or a portion thereof) can be taken out of service with the remaining train in full service for redundancy and maintenance. The water reclamation plant includes the following treatment features and system redundancies:
 - **Headworks** – Headworks facility that includes two (redundant) 3mm self-cleaning fine screens to remove inorganic material from the wastewater stream and a future automated grit removal system. Each screen will be designed to handle the complete future flow at the plant with the other screen out of service. The automated grit removal system will not be installed during the Phase 1 plant construction, but grit will be captured in a sump and removed with a vacuum system. The headworks facility will also be equipped with an odor control unit using an active carbon canister.

- Anoxic Basins – Anoxic basins will be included in the process for reduction of total nitrogen < 10 mg/L. Each anoxic basin includes a mixer and feed forward pumps. Each anoxic tank includes two duty pumps and one standby pump for redundancy.
- Aeration Basins – Aeration basins will include air diffusers and air blowers for biological treatment. The blower system is designed with system redundancy using two duty and one standby blowers.
- Membrane Basins – Membrane bioreactor (MBR) basins include micro-filtration flat plate membranes submerged in a separate tank with air diffusers and air blowers. Each membrane basin is designed for redundancy assuming that one of the MBR cassettes (four cassettes in each MBR tank) is out of service and one air blower is out of service.
- Dual Disinfection – Dual disinfection system includes ultraviolet (UV) disinfection and chemical addition (chlorine/chloramines) after anoxic, biological, and membrane treatment. Use of a dual disinfection system allows the Tribe to reduce the amount of chemical disinfection and still achieve disinfection requirements. In addition to dual disinfection systems, the UV system includes two separate UV units and is designed so that one of the UV units may be out of service for maintenance. The chemical system also has three chemical injection pumps for redundancy.
- Raw Sewage Flow Equalization – Flow equalization (storage) will be included as a feature in the first phase of water reclamation plant construction. Process Trains 3 and 4 will be used for temporary storage if needed for peak flows, additional system redundancy, or for maintenance. Process Trains 3 and 4 can provide approximately 1.5 days of storage with no discharge to the injection wells based on Phase 1 MMADF.
- Reclaimed Water Flow Equalization – In addition to raw sewage storage, reclaimed water storage will also be provided at the end of the treatment process. An additional 150,000 gallons will be provided after the water has been treated and disinfected. The additional reclaimed water storage provides an additional day of storage with no discharge to the injection wells based on Phase 1 MMADF.
- **Injection Wells** – After the water has been treated to reclaimed standards, it will be injected into vadose zone injection wells and travel through approximately 120 feet of unsaturated soil prior to entering the groundwater. Seven wells are proposed to serve the Phase 1 development and are registered with EPA. The injection well system has been designed assuming five duty wells and two as redundant (standby) wells. Each well has also been designed with **“a safety factor of two (for infiltration rate) to mitigate the risk that hydraulic conductivity will be lower than expected at the location of production wells, and also to accommodate some long-term clogging of the wells”** (Pacific Groundwater Group, July, 2015 hydrogeologic study). Construction of a reclaimed water treatment plant prior to subsurface injection exceeds requirements of the Washington State Department of Health standards for Large On-Site Sanitary (LOSS) systems (WAC 246-272B-06250) for advanced protection of groundwater. Under the LOSS requirements, a minimum vertical separation of 2 feet must be maintained between the bottom of the injection well and the groundwater when injecting high quality effluent (HQE) **which is far less vertical separation than the proposed Cowlitz Tribe’s 120 feet of vadose zone.**

Additional information in response to your letter has been organized using the same format as your letter to expedite your review.

INJECTION WELLS

Inventory Form Resubmittal – As requested, the Cowlitz Tribe has revised the July 27th inventory of injection wells to reflect seven individual injection wells (resubmitted on September 22, 2015). As discussed, the proposed injection wells will be installed at the coordinates listed on the Inventory Form and attachment Plan Sheet C-16. The Cowlitz

Tribe will provide well logs for each of the injection wells listed indicating the depth of the underground formation(s) into which each well is injecting and total depth of each well per C.F.R. 40 Part 144.83 (a) (2). It is our understanding that the Tribe may begin construction on the on-site system per C.F.R. 40 Part 144.83 (a) (1) after submittal of the well inventory was completed.

INJECTATE

Primary Drinking Water Standards – As stated in the September 4, 2015, letter, the Tribe understands that injection activities cannot cause a violation of any primary drinking water regulations under 40 CFR Part 141. As described above, the Cowlitz Tribe proposes to construct a membrane bioreactor (MBR) water reclamation plant, and infiltrate the water in an unsaturated vadose zone that has approximately 120 feet of separation between the point of injection and the groundwater. The water will be sampled for primary drinking water standards at the end of the treatment process in a monitoring well that will be constructed directly below the injection wells (in the groundwater) and on the north edge of the property as shown in Figure 2.

The location of the well field monitoring well is proposed to be located on the north side of Well 6, directly down gradient of the well field. As shown in Figure 2, water injected into the vadose zone is predicted to spread out radially approximately 120 feet (well spacing radius) from the well before entering the groundwater (based upon recommendations in the July 2015 Hydrogeologic Report, Appendix B of the Feasibility Study). The water is predicted to travel to the north/northeast direction as shown in Figure 6 from the July 2015 Hydrogeologic Report. Positioning the monitoring well north of Well 6 and a second monitoring well on the north side of the property places both wells in the travel path of the injected water.

Dual Disinfection Systems – EPA has also requested that the Tribe consider disinfection technologies or methods other than stand-alone chlorine disinfection. As described above, the Cowlitz Tribe has considered EPA's request and, as such, the water reclamation plant will be constructed with a dual ultraviolet (UV) and chemical disinfection system. By using a combination of UV and chlorination/chloramine disinfection, the Tribe is able to keep lower levels of chlorine/chloramine residual in the water and still maintain disinfection requirements.

Sample ports will be installed downstream of the reclaimed water storage tank and at each of the wells to allow operations staff to monitor chlorine/chloramine residual. It is the goal of the Tribe to maintain a target residual of .5 mg/L at the wells, which is less than other operating systems (such as Scottsdale, AZ, that uses 1 to 2 mg/L chloramine). The Tribe will also monitor for total trihalomethanes and other disinfection byproducts in the monitoring well below the injection wells as part of sampling for Primary Drinking Water Standards.

VADOSE ZONE INJECTION INTO UNDERGROUND SOURCE OF DRINKING WATER

Sampling for Primary Drinking Water Standards – EPA requested that the Cowlitz Tribe "include provisions for sampling for the presence of all primary drinking water contaminants in future proposals or construction documents." The Cowlitz Tribe proposes sampling for primary drinking water standards at the following locations and frequencies:

- Sample at the end of the water reclamation plant treatment process. Sampling would be conducted quarterly for the first year, and semiannually after that. Sampling ports will be installed after UV disinfection.
- Sample at a monitoring well installed directly down gradient of the injection wells. Sampling would be conducted semiannually for the first two years (starting 6 months after injection activities begin), and annually after the second year.
- Sample at a monitoring well installed on the north edge of the property on an annual basis starting in the third year (as it is modeled to take 4 years for the water to reach the north edge of the property).

- Sample for primary drinking water background in a third well that will be constructed up gradient from the injection activity on an as-needed basis. It is important that the Tribe document the quality of the existing groundwater to ensure that the background water quality meets the primary drinking water standards.

RECLAMATION PLANT DESIGN AND OPERATION

Sampling and Operations Procedures – EPA requested that a plan be provided for plant process control (sampling and monitoring), and to verify that injection activities are in compliance with the UIC requirements. As requested, the Cowlitz Tribe has included a Sampling and Laboratory Procedures Plan that will become part (Chapter 18) of the overarching Operation and Maintenance (O&M) Manual for the WRP.

A complete O&M Manual will be prepared that incorporates the operations of the plant, and also the operation and maintenance of individual pieces of equipment. Because much of the operations and maintenance information will not be available until the plant is approximately 50 percent complete, the Project Team has provided the Sampling and Laboratory Procedures for EPA's review in advance of the O&M Manual. An outline of the complete O&M Manual has also been provided. The Cowlitz Tribe will also provide a copy (or partial) of the completed O&M Manual upon EPA's request.

Plans and Specifications – EPA has been provided copies of the detailed plans and specifications for the water reclamation facility and the injection wells. It is our understanding that EPA does not necessarily need resubmittal of these documents. Should EPA want to have additional copies of plans and specifications, please do not hesitate to make the request. As mentioned earlier (as the injection wells are developed), details and well logs for each of the injection wells will be provided. If any of the details of the individual wells vary from the information contained in the Inventory of injection wells, it will be amended.

It is our understanding, with the submittal of the information contained in this letter and the enclosed Sampling and Laboratory Procedures, the Cowlitz Tribe has provided all of the information requested by EPA to evaluate the Tribe's request for Rule Authorization. If our understanding is incorrect and EPA needs supplemental information, please contact myself or Mike Ollivant at Parametrix as soon as possible.

Sincerely,



William Lyall P.E., Chairman

WL:mtc:nkd

Enclosures

cc: Peter Contreras, EPA
Steve Anderson, IHS
Mike Ollivant P.E., Parametrix